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ABSTRACT

This report examines the extent to which young people with disabilities were reported by parents to have received services from their state's Vocational Rehabilitation Agency during the first few years after secondary school. Data came from the National Longitudinal Transition Study of Special Education Students (NLTS), representing more than 8,000 students (ages 13-21) enrolled in special education in 1985-86. Data were collected in 1987 from telephone interviews with parents, from school records, and from a survey of educators. Results show that: (1) approximately 14% of out-of-school youth aged 16 or older applied for vocational rehabilitation (VR) services; (2) the young people who applied generally had more severe disabilities and higher socioeconomic status than those who did not apply; (3) students who attended schools that frequently contacted adult vocational rehabilitation activities in transition activities were more likely to have applied for VR services; (4) 69% of applicants for VR services received services; (5) a more active relationship between schools and VR agencies also appeared to benefit applicants for services in terms of an increased likelihood of receiving services; and (6) examination of rates of application for VR services across the first 4 years after high school showed no significant change in rates over time. Appendices contain an overview of the NLTS and information on variable construction and measurement issues. (Includes seven references.) (JDD)

PARENTS' REPORTS OF STUDENTS' INVOLVEMENT WITH VOCATIONAL REHABILITATION AGENCIES IN THE FIRST YEARS AFTER SECONDARY SCHOOL

A Report from the National Longitudinal Transition Study of Special Education Students

February 1991

Prepared for:

The Office of Special Education Programs
U.S. Department of Education

Prepared by:

Mary Wagner
Robert Cox

The National Longitudinal Transition Study of Special Education Students is being conducted by SRI International under Contract 300-87-0054 with the Office of Special Education Programs, U.S. Department of Education.

SRI International

National Longitudinal Transition Study

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INTRODUCTION

Since the advent of the Education of the Handicapped Act (EHA, P.L. 94-142) in 1975, students with disabilities have been entitled to a free, appropriate public education in the least restrictive environment that will meet their educational needs. In addition to this special education, they also have been entitled to related services that are determined to be necessary for individual students to benefit from their education. As a result, many more children and youth with disabilities have been identified and received educational services, particularly in regular public schools, than before the passage of the act. In the years since, virtually an entire generation of school children with disabilities has grown up under EHA, with the entitlements for service that it entails.

When these children leave the school system, however, they enter a different world in terms of services for persons with disabilities. Rather than a single organization—the school—determining eligibility and providing services, multiple agencies administer multiple adult service programs, with varying definitions of disabilities and criteria for eligibility. Most are not entitlement programs. Making the connection with the right agency to obtain an appropriate service for a given young person can be a significant challenge for that person or his/her family.

This report examines the extent to which young people with disabilities were reported by parents to have received services from one adult service agency, the Vocational Rehabilitation Agency,* during the first few years after secondary school. We consider the following questions:

- To what extent did parents** report that young people with disabilities applied for services from Vocational Rehabilitation (VR) agencies in the early years after high school?
- What characteristics of youth, their households, and/or their schools were related to higher reported rates of applying for services from VR agencies?
- To what extent were applicants for VR services reported by parents to have received services from VR?
- How did youth who were reported by parents to have received VR services differ from applicants who did not receive them?
- How did the rate at which youth applied for and received VR services change as more time elapsed since youth left secondary school?

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* Although in this report we refer to a state Vocational Rehabilitation Agency as a single organizational entity, in 27 states there are two separate VR agencies, one to serve persons who are blind and one to serve those with other disabilities. The analyses presented here do not distinguish which agency youth were involved with, but consider involvement with VR agencies in the aggregate.

** For 8% of youth, a parent/guardian was not available to respond to the interview. These were generally cases in which youth lived with another family member or were under the protection of the state and lived with nonrelated adults. In such cases, the adult who was most knowledgeable about the youth was interviewed. Responses of these nonparents are included in the analyses, although interviews are referred to as "parent interviews."

These questions are addressed in the following sections of this report using data recently available from the National Longitudinal Transition Study of Special Education Students (NLTS). This 5-year study is being conducted by SRI International for the Office of Special Education Programs (OSEP) of the U.S. Department of Education, with supplementary funding from the Rehabilitation Services Administration (RSA). The study includes a nationally representative sample of more than 8,000 young people who were ages 13 to 21 and secondary special education students in the 1985-86 school year. The sample represents youth in all 11 federal special education disability categories and permits findings to be generalized nationally for each disability group.

Data were collected in 1987 from telephone interviews with parents, from school records, and from a survey of educators in the schools attended by students in the sample. A second round of follow-up data will be available from winter 1990 and spring 1991; this follow-up phase of the study will include a more in-depth examination of involvement with VR agencies. (Please see the appendix for a more detailed description of data collection, data weighting, and analyses. Full reports on various aspects of sampling and data collection methods also are available: Wagner, Newman, and Shaver, 1989; Javitz and Wagner, 1990.)

THE NEED FOR POSTSCHOOL SERVICES

In considering the extent to which youth with disabilities use adult services after high school, it is important to recognize that not all youth would be interested in or in need of transition services such as those provided by VR. There are several reasons for this. First, VR services are explicitly employment oriented. The Rehabilitation Act of 1973 (P.L. 93-112, as amended) authorizes federal grants to state VR agencies to meet the "needs of individuals with handicaps so that such individuals may prepare for and engage in gainful employment to the extent of their capabilities." Some youth just leaving high school may not have employment as an immediate goal and would be unlikely to approach an adult service agency for employment- related assistance in the years immediately following secondary school.

Further, not all youth with disabilities leaving secondary school who have employment as a goal need the assistance of public programs to make a successful transition to employment. Having a disability with educational implications that require special education services in high school does not automatically imply that youth will need employment-related or other adult services when they leave high school.

The varying levels of need for transition services after high school were made explicit in 1984 by Madeline Will, then Assistant Secretary of Special Education and Rehabilitative Services of the U.S. Department of Education. In stating the Department's conceptual framework regarding transition programming, Will distinguished three types of young people with disabilities, who take different "bridges" to adulthood on leaving high school:

- Young people who make the transition "relying on their own resources or those generally available to all citizens, locating and taking advantage of work opportunities without using special disability services" (Will, 1984, p. 3).
- Those who require temporary or "time-limited" services geared toward compensating for or ameliorating the effects of their disability so that they can enter or reenter the workforce at the conclusion of their participation in the service program.
- Youth who require sustained services that will allow them to take advantage of work opportunities that otherwise would not be options for them.

Vocational Rehabilitation services are among the best known of the time-limited services available to the second group of young people; VR also can provide transitional services to members of the third group of youth as they move toward programs of sustained services provided by other sources.

In considering the extent to which young people use VR services after high school, it would be useful to know how many young people there are for whom the second bridge is appropriate: those who are unlikely to make a successful transition on their own, but who do not need sustained services to become employed. Unfortunately, there are no data available on how

recent exiters from high school are distributed among the three groups described above. However, some inferences can be drawn from available statistics regarding the size of at least the first group, those who are expected to make a successful transition without disability-related services.

The U.S. Department of Education (1989) estimates that almost one-third (31%) of students with disabilities who were ages 16 through 21 and left secondary school in the 1986-87 school year were not expected to need transition services (group 1).* The percentage of youth not anticipated to need services was higher for youth with learning disabilities (39%), for example, than for those with mental retardation (15%) or multiple handicaps (3%).

The fact that not all persons with disabilities need or would benefit from VR services is recognized in legislation authorizing VR services and in the regulations guiding their implementation. VR eligibility requirements specify that to receive services, a person must have:

- A physical or mental disability that for the individual constitutes or results in a substantial handicap to employment.
- A reasonable expectation that vocational rehabilitation services will benefit the individual in terms of employability.

Findings from the NLTS suggest that a substantial percentage of youth leaving special education did not require rehabilitative services to achieve employment. In 1989, the NLTS determined the employment status of youth who had been out of secondary school between 2 and 4 years and who had been categorized in secondary school as learning disabled, emotionally disturbed, speech impaired, or mildly or moderately mentally retarded (those in the exiter substudy). At that time, 59% were employed in competitive paid jobs that they had found themselves or had found through family or friends. Percentages were somewhat higher for those with learning disabilities, for example, than those with mental retardation (62% vs. 47%), although the differences are not statistically significant because of the relatively small sample involved. Unfortunately, similar estimates are not available for youth with sensory, physical, or multiple impairments.

* Data were reported by states to the Office of Special Education Programs. Data sources, collection methods, and bases for determining need varied among states.

WHO APPLIED FOR VR SERVICES?

Understanding that not all youth with disabilities leaving high school would be in need of or be expected to apply for VR services, we can now turn to the question of which youth were reported by parents to have applied for such services. Two aspects of the design of the NLTS complicate our ability to address this question: the source of data for the NLTS and the specific data items drawn from that source.

First, NLTS information regarding the involvement of youth with Vocational Rehabilitation agencies comes from parent reports obtained in telephone interviews; parent-reported applications may not reflect the official VR applicant status (code 02). No second source of data is included in the NLTS that could be used to verify whether parents accurately reported involvement with VR agencies, so the level of accuracy or bias in these reports is unknown. Of particular concern is the potential for underreporting of services received from VR. Vocational Rehabilitation agencies are known by different names in different states; parents may not have reported involvement with "the state vocational rehabilitation agency" if they did not know the agency by that name. Further, VR agencies often contract with other programs or agencies, which then provide services directly to clients; parents may not have been aware of or thought to report that VR was the source of a service provided through another agency. Hence, parent reports should be considered only as suggestive of the levels of involvement with VR agencies by special education students shortly after high school.

The second aspect of the NLTS data that limits our ability to paint a clear picture of special education exiters' involvement with VR concerns the specific questions asked of parents particularly as they relate to determining who applied for VR services (see Appendix B for these items). Parents were not asked explicitly whether an application for services had been submitted. Rather, application was inferred if parents reported that services had been received, that an application was pending, that youth had been determined by the agency to be ineligible, or that they had decided not to take the services offered by VR. No application was assumed if parents reported that no referral to or contact with VR had been made or that contact was made, but the family had not followed through with an application.

The NLTS data may somewhat overestimate application rates by assuming that all youth who did not get VR services had actually applied for them unless the parent explicitly gave as a reason for not getting services that they had not applied. For example, if parents reported that the youth did not get services because the family had decided they didn't want services, we assumed that an application had been submitted for services, and then the decision was made not to participate in services. In fact, it is possible that parents could have decided against services before actually applying. To the extent that overestimation of this variable occurs, the rate of receipt of services is underestimated (i.e., if fewer people actually applied, those receiving services would be a higher percentage of the total applications).

With these caveats in mind, we consider the extent to which youth were reported to have applied for VR services. Our discussion focuses on youth who were at least 16 years old in 1987 and who were out of secondary school at the time of the 1987 interview. Although VR agencies can be actively involved in outreach and coordination activities with secondary schools, secondary school students did not frequently apply for VR services while still in high school. NLTS data indicate that only 4% of students who were at least 16 years old but still in secondary school had applied for VR services; these in-school youth are not included in the analyses in the remainder of this report.

The young people whom we consider here, youth aged 16 or older and no longer in secondary school, had been out of school from 1 month to 2 years at the time data were collected in 1987. Questionnaire items in the parent interview on which the following analyses are based asked about interactions with VR in the 12 months preceding the interview. Hence, applications for VR that might have been submitted more than a year previously would not be counted in these analyses.

We expect that the extent to which youth were reported by parents to have had a VR application submitted by or for them was related both to their disability characteristics and, to a lesser extent, to other individual and family factors. Those relationships are described in the following sections.

Disability Characteristics

Overall, 14% of out-of-school youth aged 16 or older were reported by parents to have had an application for VR services submitted by or for them in the previous 12 months. There was considerable variation in the rates of VR application reported for youth in different disability categories, as shown in Figure 1. Application rates were significantly higher for youth who were deaf (57%), deaf/blind (54%), hard of hearing (40%), or multiply handicapped (36%), for example, than for those with speech impairments or emotional disturbances (15% and 9%; $p<.01$). (The disability categories used throughout this report are those assigned by the youth's school in 1985-86; this school classification for a given youth may not match the disability classification designated by VR.)

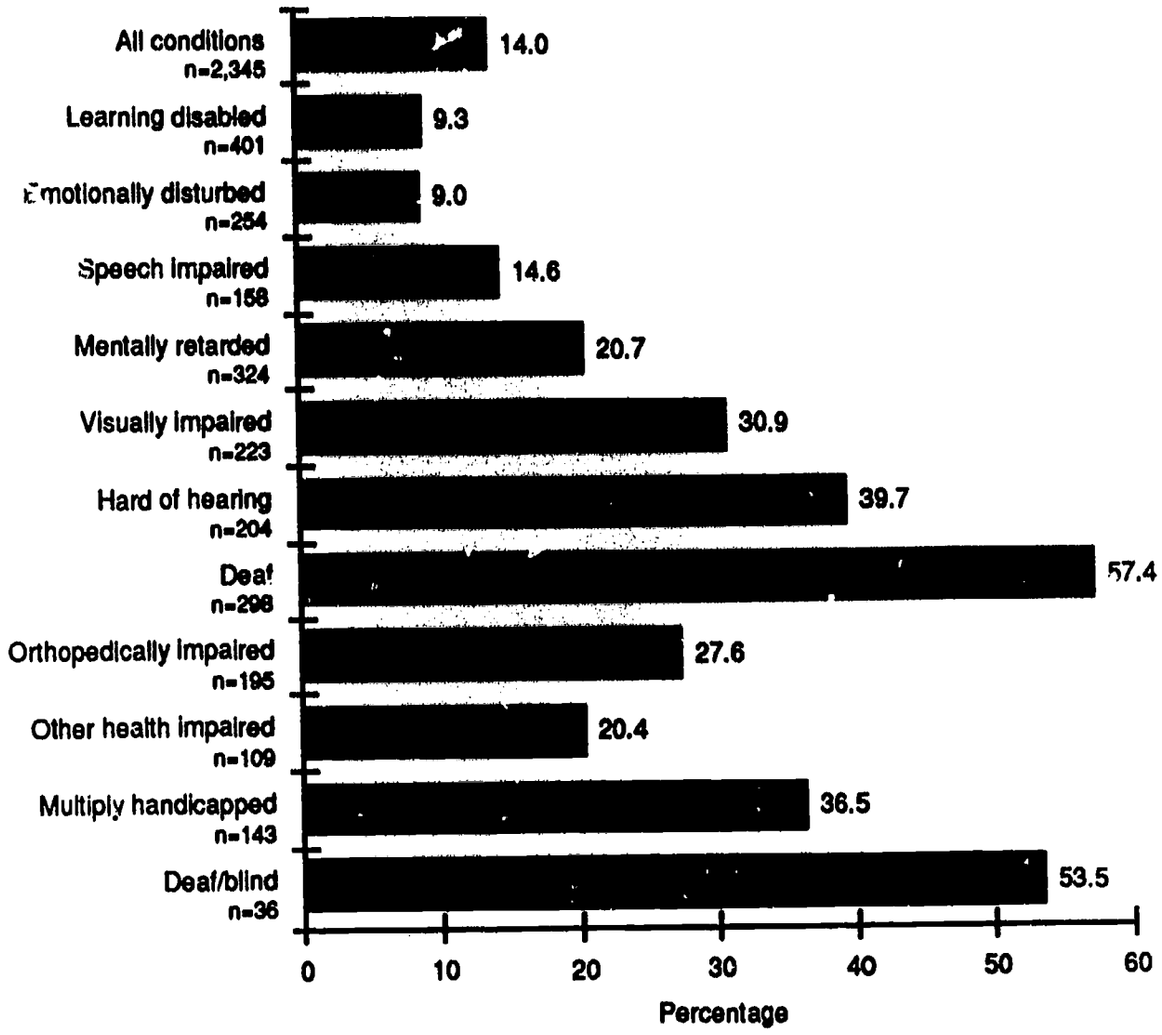

FIGURE 1 OUT-OF-SCHOOL YOUTH WITH DISABILITIES REPORTED BY PARENTS TO HAVE APPLIED FOR VR SERVICES

Source: Parent interviews.

Table 1 further demonstrates the strong relationsnip between severity of disability and reports of application for VR services. It depicts reported application rates for youth with varying levels of self-care and functional mental skills reported by parents. Self-care skills refer to the ability of youth to feed themselves, dress themselves, and get to places outside the home without assistance. Functional mental skills refer to the application of basic mental processes, such as reading or calculating, to four everyday activities: reading and understanding common signs, telling time on a clock with hands, counting change, and looking up telephone numbers and using the telephone. Parents rated youths' abilities to perform each skill on a scale ranging from 1 (not at all well) to 4 (very well). Scores for the three self-care items were summed to create an overall ability scale that ranges from 3 to 12. Scores for the four functional mental skills were summed to yield a scale that ranges from 4 to 16.

Table 1

APPLICATION RATES FOR VR SERVICES FOR OUT-OF-SCHOOL YOUTH WITH DISABILITIES BY MEASURES OF YOUTHS' FUNCTIONAL ABILITIES

Disability-Related Characteristics	Youth for Whom Application for VR Services Was Submitted		
	%	S.E.	N
Self-care abilities*			
Low	33.3	9.2	104
Medium	32.8	6.4	345
High	12.4	1.7	1,835
Functional mental skills**			
Low	26.9	5.8	263
Medium	21.5	3.4	801
High	8.2	1.8	1,161

* Parents rated on a 4-point scale youths' abilities to dress themselves, feed themselves, and get around outside the home. Ratings were summed to create a scale ranging from 3 to 12. A score of 3 to 6 is considered low, 7 to 10 medium, and 11 or 12 high.

** Parents rated on a 4-point scale youths' abilities to tell time on a clock with hands, look up telephone numbers and use the phone, count change, and read common signs. Ratings were summed to create a scale ranging from 4 to 16. A score of 4 to 8 is considered low, 9 to 14 medium, and 15 or 16 high.

Source: Parent interviews.

Youth with lower self-care and functional mental skills were significantly more likely to have applied for VR services. For example, one-third of youth rated by parents as low or medium in their self-care abilities were reported to have applied for VR services, compared with 12% of those rated as having high self-care skills ($p<.05$). Higher application rates were reported for the more severely impaired, even among those within the same disability category. For example, among youth with multiple handicaps, 50% of youth with low self-care abilities were reported to have had an application for VR services submitted by or for them, compared with 42% of those with medium skills and 23% of those with high self-care skills. Similarly, among those with mental retardation, the application rate was 31% for those with medium self-care skills and 18% for those rated as having high skills. Although these within-category differences are not statistically significant because of the small number of cases at each skill level within each disability category, the pattern is consistent across all categories.

A similar relationship of application rates to severity of disability is noted when we consider functional mental skills. Overall, the application rate was significantly higher for those rated as having low functional mental skills (27%) than for those with high functional mental abilities (8%; $p<.001$). However, the relationship of functional abilities and application rates is not uniform for youth in specific disability categories. In some categories, higher-functioning youth were less

likely to apply. For example, in the emotionally disturbed category, 22% of those rated as medium on the self-care skills scale applied, compared with only 5% of those rated high on the scale. Similarly among those with multiple handicaps, 46% applied among low-functioning youth, compared with 30% of youth with medium abilities. However, this pattern was not noted among those with sensory impairments. For example, among youth with visual impairments, the application rate was virtually identical for those in the lowest and highest functional categories (20% and 23%). Similarly, deaf youth rated as having medium functional mental skills were equally likely to have applied for VR services as those with high skills (59% and 58%).

Other Individual and Family Characteristics

Although we hypothesize that the nature and severity of a youth's disability strongly influence whether VR services are sought by or for him/her, other factors related to the youth or his/her family may also relate to whether a VR application is submitted. Because we expect that youth who could rely on their own abilities or resources to achieve employment after high school would be less likely than others to apply for VR services, we focus here on factors that indicate youth who may have had relatively greater resources or tools to assist them in making an independent transition, including school completion status (i.e., whether the youth earned a high school diploma), age, and socioeconomic status. Application rates for youth who varied on each of these factors are presented in the following subsections.

School Completion Status

Youth who graduate from high school have a credential that may translate into greater employment opportunities than are available to youth who age out or drop out of high school. They also would be eligible for some forms of training or education that may not be available to dropouts or those aging out of high school (e.g., college courses). Hence, we might hypothesize that the application rate for VR services would be lower among high school graduates than among nongraduates. On the other hand, VR is a common funding source for postsecondary education and support services, which might lead us to hypothesize that VR applications would be more common among high school graduates, who would be more likely than dropouts to pursue postsecondary education.

Regardless of the direction of our hypothesis, the relationship between school completion and VR application is confounded by the influence of disability. For example, NLTS data indicate that the majority of youth with visual impairments graduated from high school, but half of youth with emotional disturbances left school by dropping out, whereas half of those with multiple handicaps left school by aging out. An understanding of the relationship between school completion status and VR application requires that we disentangle the influence of disability.

To do this, Table 2 demonstrates the relationship between school completion and VR application overall, and for youth who vary in the severity of their disabilities. It shows that, for youth as a whole, those who aged out of high school were most likely to apply for VR services (28%), compared with either graduates (14%; $p<.01$) or dropouts (8%; $p<.001$). Further, this pattern of higher application rates for those who aged out holds even when the level of functional ability is held constant. For example, among youth rated by parents as having medium self-care skills, 40% of those who aged out applied for VR services, compared with about 30% of those who either graduated or dropped out; differences are not significant because of the small samples. It is likely that youth who aged out differed systematically from others in disability-related ways not captured by the functional measures of the NLTS, resulting in their systematically higher application rates for VR services.

Table 2

APPLICATION RATES FOR VR SERVICES FOR OUT-OF-SCHOOL YOUTH WITH DISABILITIES BY METHOD OF SCHOOL LEAVING

	Youth Applied for VR Services After Leaving School by:					
	Graduating		Aging Out		Dropping Out	
Disability Category	%	N	%	N	%	N
All youth	14.5 (2.2)	1,454	27.5 (4.3)	422	8.3 (2.9)	394
Self-care abilities*						
High	14.1 (2.2)	1,219	21.3 (4.6)	239	7.7 (2.8)	322
Medium	29.9 (9.6)	171	40.4 (9.5)	122	31.0 (16.1)	41
Low	17.3 (12.4)	30	49.0 (14.5)	49	—	18
Functional mental skills**						
High	9.7 (2.3)	840	13.1 (5.7)	110	3.8 (2.7)	187
Medium	28.1 (5.0)	471	32.7 (6.8)	159	11.0 (5.0)	147
Low	20.2 (8.9)	81	31.4 (8.8)	124	26.5 (15.3)	39

Note: Standard errors are in parentheses.

* Parents rated on a 4-point scale youths' abilities to dress themselves, feed themselves, and get around outside the home. Ratings were summed to create a scale ranging from 3 to 12. A score of 3 to 6 is considered low, 7 to 10 medium, and 11 or 12 high.

** Parents rated on a 4-point scale youths' abilities to tell time on a clock with hands, look up telephone numbers and use the phone, count change, and read common signs. Ratings were summed to create a scale ranging from 4 to 16. A score of 4 to 8 is considered low, 9 to 14 medium, and 15 or 16 high.

Source: Parent interviews.

Dropouts generally had the lowest application rates at a given ability level, although they were concentrated primarily at the high and medium levels. By dropping out, youth often demonstrate a frustration or lack of satisfaction with what is offered by the education system. Perhaps that attitude carried over to other service programs and helps to explain their generally lower application rates for VR services, even when functional ability levels are held constant. The difference also may be partially explained by the difference in age of dropouts (who tended to be less than 18 years old) and those who graduated (at about age 18) or aged out (at 21 or older). The relationship of age to application for VR services is discussed in the following subsection.

Age

Older youth may have greater maturity and experience to bring to employers, and hence have a greater probability of finding jobs on their own than younger high school exiters. This might lead us to expect a lower application rate for VR services for older youth, independent of other factors. However, as mentioned above, age is related both to the severity of youths' disabilities and to school completion status. Because of the NLTS sampling approach (see Appendix A), youth who were age 21 and out of secondary school in 1987 were still in high school at age 19 or 20; these youth were generally more severely impaired and aged out of secondary school, in contrast to youth leaving school at earlier ages. Conversely, youth age 17 and out of school in 1987 were virtually all drop outs, and were predominantly learning disabled or emotionally disturbed. Hence, we must control for the influences of severity of disability and mode of school completion to have a clear picture of the relationship of age to the likelihood of VR application.

Youth included in these analyses were ages 16 to 23 at the time of the NLTS interviews. Among youth in this age range, Table 3 suggests that older youth were significantly more likely than younger exiters to have applied for VR services. One in 5 youth aged 20 or more were reported by parents to have had an application submitted by or for them, compared with 4% of youth under age 18 ($p<.01$). This relationship is consistent, even when we examine application rates for youth of different ages who shared the same functional levels and school completion modes, suggesting that increasing age is not a particular advantage in transitioning to employment without rehabilitation services. For example, among youth with high functional abilities, 17% of those age 20 or older applied for VR services, while only 4% of youth less than 18 did so ($p<.05$). Similarly, among dropouts, those 20 or older applied at a higher rate than those who were younger (19% vs. 6%), although there were too few dropouts for this difference to be statistically significant.

Socioeconomic Status

Youth from higher-income households have resources with which to acquire services privately. Further, family social or business contacts might increase the likelihood that such

Table 3

APPLICATION RATES FOR VR SERVICES FOR OUT-OF-SCHOOL YOUTH WITH DISABILITIES AS THEY VARY BY YOUTH'S AGE

	Youth Applied for VR Services Who in 1987 Were:					
	Less than 18		18 or 19		20 or Older	
Disability Category	%	N	%	N	%	N
All youth	4.1 (4.2)	106	10.3 (2.2)	927	20.0 (2.7)	1,310
Self-care abilities*						
High	3.9 (4.4)	81	9.6 (2.2)	821	17.4 (3.0)	931
Medium	—	11	30.9 (15.1)	76	36.3 (7.1)	258
Low	—	10	—	11	35.8 (10.3)	83
Functional mental skills**						
High	1.3 (3.6)	49	7.4 (2.3)	586	9.7 (3.1)	525
Medium	9.3 (10.4)	31	14.2 (4.6)	270	31.6 (5.2)	499
Low	—	17	27.4 (17.2)	38	28.9 (6.5)	208
School completion status						
Graduated	—	9	12.7 (2.8)	694	18.4 (3.3)	752
Dropped out	5.6 (5.5)	71	5.9 (3.0)	201	19.4 (7.5)	122

Note: Standard errors are in parentheses.

* Parents rated on a 4-point scale youths' abilities to dress themselves, feed themselves, and get around outside the home. Ratings were summed to create a scale ranging from 3 to 12. A score of 3 to 6 is considered low, 7 to 10 medium, and 11 or 12 high.

** Parents rated on a 4-point scale youths' abilities to tell time on a clock with hands, look up telephone numbers and use the phone, count change, and read common signs. Ratings were summed to create a scale ranging from 4 to 16. A score of 4 to 8 is considered low, 9 to 14 medium, and 15 or 16 high.

Source: Parent interviews.

youth could find employment independently. These factors suggest that youth from higher-SES households would be less likely to apply for VR services than youth from poorer households. However, research has suggested that better-educated parents, generally from higher-SES households, may be more confident in approaching the sometimes complex adult service

systems and more competent in working within them to acquire services for their children with disabilities; from this perspective, higher VR application rates would be expected for youth from higher-SES households.

Although differences are not statistically significant, Table 4 depicts a consistent pattern of slightly higher application rates for youth from higher-SES households when several indicators of SES status are examined. For example, 20% of youth from households whose head was a college graduate or more were reported to have applied for VR services, compared with 12% of youth from households whose head was not a high school graduate. Marginally higher rates of application also were noted for youth from households with higher incomes and with two parents when contrasted with lower-income and single-parent households. White youth were not markedly more likely to have applied for VR services than were black or Hispanic youth. Because there are few significant differences between disability categories in most factors related to socioeconomic status (Marder and Cox, 1991), these relationships are unlikely to be seriously confounded by disability-related influences.

Table 4

VARIATIONS IN APPLICATION RATES FOR VR SERVICES BY MEASURES OF SOCIOECONOMIC STATUS FOR OUT-OF-SCHOOL YOUTH WITH DISABILITIES

Demographic Characteristics	Youth for Whom Application for VR Services Was Submitted		
	%	S.E.	N
Household income			
Less than $12,000	13.3	3.3	490
$12,000 to $24,999	13.7	3.2	1,083
$25,000 or more	17.3	2.9	954
Head of household's highest education			
Less than high school	11.8	2.5	742
High school graduate	13.6	2.7	795
Some college	17.2	4.9	379
College graduate or more	19.9	5.5	341
Youth from household with:			
One parent	12.9	2.8	737
Two parents	15.0	2.1	1,525
Ethnic background			
White	13.5	1.9	1,563
Black	14.8	3.6	522
Hispanic	11.5	7.0	178

Source: Parent interviews.

SCHOOL COORDINATION WITH ADULT SERVICE AGENCIES: HOW MUCH IS DONE? DOES IT MAKE A DIFFERENCE?

Beyond the characteristics of youth and their households described thus far, the NLTS also has investigated relationships between school characteristics and the extent to which young people applied for VR services. When we examine the timing of youths' applications for VR services, we find that those who had been out of secondary school less than 1 year had a significantly higher application rate (17%) in the previous year than youth who had been out of school between 1 and 2 years (10%; $p<.05$). For youth out of school less than 1 year, it is unknown whether their application for VR services occurred while they were in secondary school or upon leaving. However, this timing of increased application for VR services suggests that the act of school leaving may be a catalyst for seeking adult services provided by VR. It further suggests that the schools may play an important role in the extent to which students seek services in preparation for or upon leaving school. How frequent are coordination activities between schools and adult service agencies such as VR when students are preparing for their transitions out of secondary school? Do schools, by exerting relatively more effort in contacting adult service agencies such as VR, increase the likelihood that students will actually apply for services?

Table 5 indicates that school contacts with other agencies regarding transition issues were not the norm. Special education personnel in secondary schools were asked how often school personnel worked with adult service agencies or postsecondary schools to prepare for the transition of special education students. Only about 1 in 10 youth with disabilities (12%) attended schools in which this always or usually occurred, and 25% attended schools that reported they usually contacted adult service agencies. Almost two-thirds of youth (63%) attended schools in which this was seldom or never the case.

Regarding school involvement with VR agencies specifically, 1 in 4 students attended schools in which staff maintained regular contacts (monthly or weekly) with VR agencies; 42% were in schools in which contacts were irregular (once or "a couple of times" a year). One-third of students were in schools in which staff were reported to contact VR "hardly ever."*

School staff were also asked to report on the kinds of activities that resulted from their contacts with VR agencies regarding the transition of special education students. Referrals of students to VR agencies were significantly more common than any other type of activity reported; 83% of youth with disabilities attended schools in which staff referred special education students to VR agencies. About half (54%) of youth attended schools in which VR staff performed vocational assessments for special education students. About 1 in 3 students (34%) attended schools to which VR staff were assigned for ongoing work with special

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* Virtually identical patterns were reported for staff contact with mental health agencies and social service agencies. Contacts with developmental disability agencies were generally less frequent.

education students or in which VR staff and school staff worked together to develop programs or services for special education students (32%). VR staff were involved in developing IEPs for special education students in schools attended by 22% of students. Note that in completing the survey, school administrators were describing school practices in general. Therefore, activities involving VR agencies were applicable to some special education students in the schools reporting them, but not necessarily to all students or to the students in the NLTS sample who attended the school.

Table 5

LEVEL OF SCHOOL INVOLVEMENT WITH ADULT SERVICE AGENCIES DURING THE TRANSITION PROCESS FOR STUDENTS WITH DISABILITIES

Level of Involvement	Percentage	Standard Error
Youth attended schools that reported contacting adult service agencies during the transition process for students with disabilities:		
Always	12.1	1.1
Usually	24.8	1.4
Seldom	47.2	1.6
Never	15.9	1.2
N	5,365	
Youth attended schools that reported contacting VR agencies during the transition process for students with disabilities:		
Regularly	25.1	1.4
Infrequently	42.3	1.6
Hardly ever/never	32.6	1.5
N	5,506	
Youth attended schools that reported coordination with VR resulted in:		
School staff referring special education students to VR	83.1	1.2
VR staff doing vocational assessments for special education students	54.3	1.6
VR staff being assigned to the school for ongoing work with special education students	34.5	1.6
VR and school staff jointly developing programs/ services for special education students	32.3	1.5
VR staff becoming involved in developing IEPs	22.2	1.4
N	5,328	

Source: Survey of Secondary Special Education Programs.

The level of involvement of schools with other agencies regarding transition issues varied systematically by the type of school. Overall, special schools for youth with disabilities were significantly more active than regular secondary schools in relating to adult service agencies in general and to VR agencies in particular, as shown in Table 6. Almost one-third (30%) of special school students attended schools that usually or always contacted adult service agencies on transition issues, compared with only 10% of regular secondary school students ($p<.001$). The percentage of students attending schools that maintained regular contacts with VR specifically also was significantly higher for those in special schools than for those in regular secondary schools (40% vs. 24%; $p<.001$).

This NLTS finding of greater involvement with VR agencies in special schools is consistent with recent research on school-VR coordination activities in special and regular schools serving deaf students, which also reported a higher level of such activities in special schools (Allen, Rawlings, and Schildroth, 1989). Such findings may relate in part to the nature of the majority of students who attended special schools. Almost two-thirds of special school students were classified as mentally retarded, sensory impaired, or multiply handicapped, compared with only 23% of regular school students ($p<.001$), among whom learning disabled students were predominant. Greater frequency of contact with adult service agencies on the part of special school staff may reflect the relatively greater need for such services on the part of their students. Alternatively, greater interaction with VR agencies on the part of special school staff may reflect the historic linkages between the two entities.

School size and location also appear to relate to the level or nature of school involvement with VR and other adult service agencies. For example, small schools were significantly more likely to report never contacting adult service agencies regarding transition of special education students than were large schools (22% vs. 7%; $p<.001$). Similarly, small schools were significantly less likely to report regular contacts with VR than were large schools (18% vs. 40%; $p<.05$). Consistent with findings regarding small schools, students attending schools in rural areas (which are generally smaller than urban schools) also were less likely to have frequent VR/school contact. Perhaps the larger concentration of students with disabilities in larger and urban schools provided the critical mass of students to motivate or justify greater involvement between the schools and VR or other adult service agencies.

Table 6

VARIATIONS IN SCHOOL INVOLVEMENT WITH VR AGENCIES DURING THE TRANSITION PROCESS BY SELECTED SCHOOL CHARACTERISTICS

School Involvement	Student Attended: Special School	Student Attended: Regular School	Student Enrollment Was: ≤500	Student Enrollment Was: 500-999	Student Enrollment Was: 1000-1500	Student Enrollment Was: ≥1500	Location Was: Urban	Location Was: Suburban	Location Was: Rural
Percentage of youth attending schools reporting frequency of coordination with adult agencies for special education students in transition:									
Never	6.9 (3.1)	16.7 (1.3)	22.5 (3.3)	24.8 (2.5)	9.4 (2.1)	6.6 (2.0)	12.7 (2.4)	7.6 (1.6)	27.8 (2.5)
Seldom	19.3 (3.3)	49.7 (1.7)	53.0 (3.9)	44.6 (2.9)	55.6 (3.6)	45.2 (3.9)	48.7 (3.6)	53.8 (2.9)	46.3 (2.8)
Usually	43.6 (4.1)	23.1 (1.5)	19.5 (3.1)	16.9 (2.2)	23.7 (3.1)	38.3 (3.8)	27.3 (3.2)	25.4 (2.6)	18.4 (2.1)
Always	30.2 (3.8)	10.5 (1.1)	4.9 (1.7)	13.7 (2.0)	11.4 (2.3)	9.9 (2.3)	11.3 (2.3)	13.2 (2.0)	7.5 (1.5)
Percentage of youth attending schools reporting frequency of coordination with VR agencies for special education students in transition:									
Hardly ever	19.6 (3.3)	33.7 (1.6)	51.1 (3.9)	39.9 (2.8)	18.6 (2.9)	17.6 (3.6)	33.2 (3.4)	29.1 (2.7)	38.3 (2.6)
Infrequently	40.3 (4.6)	42.5 (1.7)	30.5 (3.6)	42.3 (2.8)	55.8 (3.7)	42.7 (3.9)	38.2 (3.5)	45.8 (2.9)	42.6 (2.7)
Regularly	40.1 (4.0)	23.8 (1.5)	18.3 (3.0)	17.8 (2.2)	25.6 (3.2)	39.7 (3.9)	28.6 (3.2)	25.3 (2.5)	19.0 (2.1)
Percentage of youth attending schools reporting nature of interaction with VR agencies for special education students in transition:									
School staff referred students to VR	76.0 (3.6)	83.8 (1.3)	72.3 (3.6)	84.6 (2.1)	83.6 (2.7)	92.8 (2.0)	84.4 (2.0)	84.3 (2.1)	82.9 (2.1)
VR staff did vocational assessment for students	37.4 (4.0)	55.8 (1.7)	52.0 (4.0)	56.7 (2.9)	57.9 (3.6)	58.8 (3.9)	62.0 (3.5)	52.4 (2.9)	55.4 (2.8)
VR staff were assigned to school for ongoing work with students	38.9 (4.1)	34.0 (1.7)	29.7 (3.6)	21.1 (2.4)	49.3 (3.7)	45.6 (3.9)	43.5 (3.5)	35.2 (2.8)	26.7 (2.5)
VR and school staff jointly developed programs/services	41.2 (4.1)	31.5 (1.6)	20.5 (3.2)	27.8 (2.6)	39.3 (3.6)	41.1 (3.9)	34.1 (3.4)	35.8 (2.8)	25.6 (2.4)
VR and school staff jointly developed students' IEPs	23.1 (3.5)	22.2 (1.5)	20.5 (3.2)	15.7 (2.1)	30.0 (3.4)	27.4 (3.5)	28.8 (3.1)	25.3 (2.6)	17.5 (2.1)
N	1,594	3,734	461	1,024	973	1,210	1,348	1,414	948

Note: Standard errors are in parentheses.
Source: Survey of Secondary Special Education Programs.

Although the degree of involvement with adult agencies varied across schools, the key question is whether students were more likely to have made the connection with such agencies when school/agency involvement did occur. In fact, higher rates of application for VR services were reported for students attending schools that contacted adult service agencies more often, as shown in Table 7. For example, 1 in 4 youth (26%) from schools where staff always made contact with adult service agencies to prepare for transition applied for VR services, compared with 6% of youth who attended schools where staff never made contacts with adult service agencies ($p<.05$). The frequency of contacts between school staff and VR agencies specifically was also related to levels of involvement on the part of youth. For example, only 8% of youth attending schools that "hardly ever" contacted VR actually applied for VR services, compared with 22% of youth attending schools that reported regular VR contacts ($p<.05$).

The relationship between greater school/agency contact and higher application rates is confounded, however, by the fact that greater contact was reported for special schools, which served students who were more likely to apply for VR services. Perhaps it was the differences

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Table 7

VARIATIONS IN APPLICATION RATES FOR VR SERVICES BY SELECTED SECONDARY SCHOOL CHARACTERISTICS FOR OUT-OF-SCHOOL YOUTH WITH DISABILITIES

School Characteristics	Youth for Whom Application for VR Services Was Submitted		
	%	S.E.	N
Youth attended school that coordinated with agencies for transition:			
Always	25.6	7.0	213
Usually	18.7	4.3	600
Seldom	14.0	3.1	515
Never	6.2	4.4	122
Youth attended school whose staff contacted VR:			
Regularly	21.5	4.6	618
Infrequently	18.2	3.7	511
Hardly ever	7.7	3.1	291

Source: Survey of Secondary Special Education Programs.

between special and regular school students, not the increased contact, that helps to explain higher application rates when more frequent contact was reported. Data presented in Table 8 belie this explanation, suggesting rather that higher VR application rates occurred when contacts were more frequent for students in both special and regular secondary schools. For example, within regular schools, only 2% of students applied for VR from schools reporting they hardly ever contacted VR for transition planning, compared with 20% of students who attended schools with regular VR contacts. A similar relationship exists for special school students, although the differences are not statistically significant because of the small samples. Further, application rates were generally higher for students in special schools than in regular schools, regardless of the level of VR contact reported.

Table 8

VARIATIONS IN APPLICATION RATES FOR VR SERVICES BY LEVEL OF SCHOOL CONTACT WITH AGENCIES FOR OUT-OF-SCHOOL YOUTH WITH DISABILITIES

School Characteristics	Application for VR Services Submitted for Youth Who Attended: Special School %	Special School N	Regular School %	Regular School N
All youth	27.2 (5.1)	533	13.5 (1.9)	1,450
Youth attended schools that reported staff contacted adult service agencies for transition:				
Never	—	11	5.9 (4.4)	111
Seldom	15.6 (14.4)	57	14.0 (3.2)	458
Usually	27.5 (7.8)	247	17.6 (4.7)	353
Always	43.1 (12.6)	106	20.2 (7.8)	107
Youth attended school whose staff were reported to contact VR:				
Hardly ever	14.5 (11.2)	59	2.4 (3.1)	232
Infrequently	33.2 (12.4)	99	17.0 (4.0)	412
Regularly	34.5 (8.8)	265	20.2 (6.0)	353

Note: Standard errors are in parentheses.
Source: Survey of Secondary Special Education Programs.

PARENTS' REPORTS OF RECEIPT OF VR SERVICES

Applying for VR services, of course, is only the first step toward acquiring services to help those with disabilities achieve employment. As mentioned early in this report, the act of applying for services begins a process of eligibility determination, after which some applicants receive services and others do not. Here we consider the extent to which youth who applied for services were reported by parents to have received services from a VR agency.

Because the eligibility determination process for VR services can involve a variety of assessment and diagnostic activities, it can be lengthy. Hence, at a given time, some percentage of applications are pending a decision on eligibility. At the time of the 1987 interview, parents of 8% of applicants who were out of secondary school reported that they were awaiting a determination of eligibility. Conversely, a decision had been made regarding eligibility for 92% of applicants. The following analyses look at the applications that had been acted on and report the percentage of applicants who were reported by parents to have received VR services (see Appendix B for variable definitions).

NLTS data suggest that 69% of young applicants just out of high school actually received VR services, according to their parents (Figure 2). The rate of service receipt was highest for youth who were categorized as learning disabled, hard of hearing, or deaf (92%, 89%, and 82%), and lowest for those who were multiply handicapped (56%).

Among those not receiving services, a formal determination of ineligibility was reported by parents of only about 1 in 3 applicants (34%) as the reason for not receiving services. For the majority of applicants who did not receive services, parents reported either that they chose not to accept services (47%) or that, in their view, VR was unable to provide appropriate services (19%). Readers should note that parents' perceptions of the reasons services were not received may have differed from agency determinations of eligibility or reasons for case closure.

Contrasting the group of applicants who received services and those who did not sheds somewhat more light on possible explanations for the different outcomes. We caution the reader that because the sample of those receiving services is relatively small, few differences between groups attain statistical significance; therefore, these analyses are only suggestive.

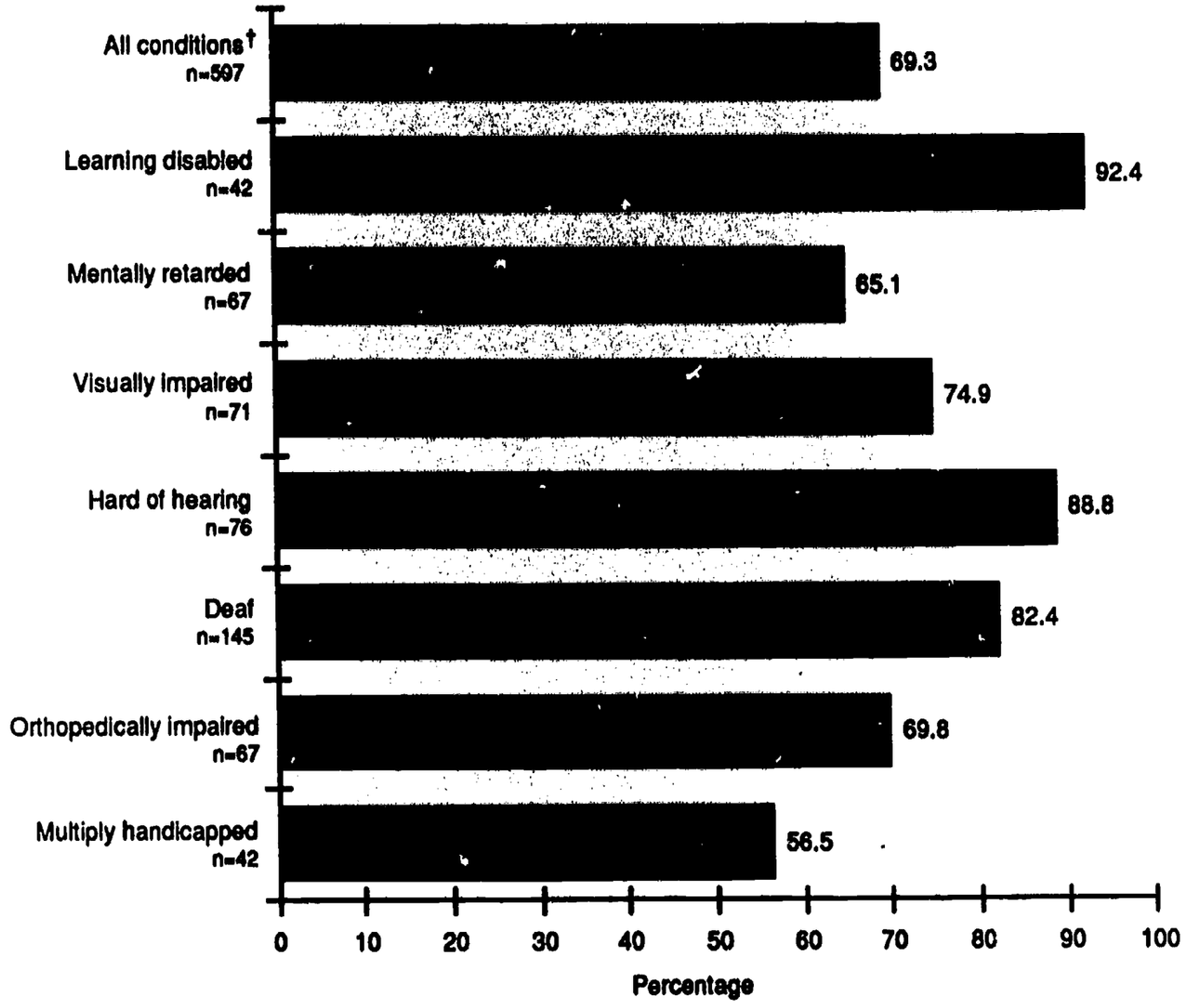

FIGURE 2 APPLICANTS REPORTED BY PARENTS TO HAVE RECEIVED VR SERVICES

† Although "All conditions" includes youth in all 11 federal disability categories, data are presented separately only for categories with at least 30 VR applicants.

Source: Parent interviews.

Table 9 suggests that those who received services were somewhat higher-functioning in ways measured by the NLTS than were youth whose parents reported that they did not. For example, a greater percentage of applicants who received services scored highly on both measures of functional abilities than did those not receiving services (42% and 82% compared with 22% and 77%). Similarly, the average measured IQ of those receiving services was 75, compared with an average of 63 for nonrecipients.

Table 9

DIFFERENCES IN DISABILITY CHARACTERISTICS OF APPLICANTS FOR VR SERVICES WHO WERE REPORTED TO HAVE RECEIVED AND NOT RECEIVED SERVICES

Disability Characteristics	Applicants Who Were Reported to Have: Received Services	Applicants Who Were Reported to Have: Not Received Services
Percentage of youth with parents reporting they had:		
High self-care skills*	82.4	77.0
	(5.1)	(8.7)
N	462	124
High functional mental skills**	42.3	21.6
	(6.7)	(8.7)
N	447	121
Average IQ score	75.0	63.4
	(3.4)	(6.7)
N	221	63

Note: Standard errors are in parentheses.

* Parents rated on a 4-point scale youths' abilities to dress themselves, feed themselves, and get around outside the home. Ratings were summed to create a scale ranging from 3 to 12. A score of 3 to 6 is considered low, 7 to 10 medium, and 11 or 12 high.

** Parents rated on a 4-point scale youths' abilities to tell time on a clock with hands, look up telephone numbers and use the phone, count change, and read common signs. Ratings were summed to create a scale ranging from 4 to 16. A score of 4 to 8 is considered low, 9 to 14 medium, and 15 or 16 high.

Source: Data on skills levels and receipt of services come from parent interviews. IQ scores come from students' school records from their most recent year in secondary school.

NLTS data also suggest that those who received services exhibited a pattern of generally higher socioeconomic status than those who did not, as shown in Table 10. Those receiving services were somewhat less likely to come from a household with an annual income of less than $25,000 (57% vs. 68%) and from a household whose head was not a high school graduate (30% vs. 44%) than nonrecipients. Youth whose parents reported that they received services also were somewhat more likely to be white than were nonrecipients (70% vs. 62%). This general pattern of lower socioeconomic status among nonrecipients is consistent with data on all applicants for VR services reported by the Rehabilitation Services Administration, which suggest that those supported by public assistance were a larger proportion of nonacceptances than of those accepted and rehabilitated (20% vs. 14%; RSA, 1988).

Table 10

DIFFERENCES IN DEMOGRAPHIC CHARACTERISTICS OF APPLICANTS FOR VR SERVICES WHO WERE REPORTED TO HAVE RECEIVED AND NOT RECEIVED SERVICES

Demographic Characteristics	Applicants Who Were Reported to Have: Received Services	Applicants Who Were Reported to Have: Not Received Services
Percentage of youth from households with an annual income of less than $25,000 per year	56.9	68.3
	(7.0)	(10.1)
N	429	114
Percentage of youth from households whose head was not a high school graduate	30.3	44.5
	(6.2)	(10.3)
N	458	115
Percentage of youth who were minorities	30.1	37.5
	(6.4)	(10.0)
N	468	127

Note: Standard errors are in parentheses.
Source: Parent interviews.

There were no marked differences between applicants who received services and nonrecipients according to gender, age, or their mode of leaving secondary school.

Finally, NLTS data suggest that applicants who attended schools that had a more active relationship with VR agencies were more likely actually to have received services than applicants from schools with less interaction. Table 11 presents data indicating, for example, that only 8% of applicants who received services came from schools that hardly ever contacted VR, compared with 30% of nonrecipients. Similarly, 48% of those who were reported to have received services came from schools in which VR and school staff jointly planned transition programs for students with disabilities, compared with only 21% of applicants who did not receive services ($p<.05$).

Table 11

DIFFERENCES IN SECONDARY SCHOOL CHARACTERISTICS OF OUT-OF-SCHOOL APPLICANTS FOR VR SERVICES WHO WERE REPORTED TO HAVE RECEIVED AND NOT RECEIVED SERVICES

School Characteristics	Applicants Who Were Reported to Have: Received Services %	Received Services S.E.	Not Received Services %	Not Received Services S.E.
Percentage of youth who attended a special school for students with disabilities	13.7	4.8	9.0	6.1
N	407		109	
Percentage of youth who attended schools reporting they contacted adult service agencies:				
Never	2.4	2.6	15.2	9.1
Seldom	45.0	8.4	47.0	12.7
Usually	34.6	8.0	31.8	11.8
Always	18.0	6.4	5.9	6.0
N	313		83	
Percentage of youth who attended schools reporting they contacted VR agencies:				
Hardly ever	7.7	4.4	30.3	11.2
Infrequently	52.4	8.3	33.8	11.6
Regularly	39.9	8.1	36.0	11.7
N	310		87	
Percentage of youth who attended schools in which VR contacts resulted in:				
School referring students to VR	92.2	4.5	82.2	9.7
Joint school/VR program planning	48.0	8.4	20.6	10.3
VR staff involved in IEPs	32.0	7.8	18.9	9.9
VR staff doing vocational assessments for special education students	67.6	9.5	41.2	12.5
VR staff being assigned to the school for ongoing work with students	47.7	8.3	31.6	11.8
N	312		83	

Source: Data on receipt of services come from parent interviews. Data on school/VR coordination come from the Survey of Secondary Special Education Programs.

TRENDS IN INVOLVEMENT WITH VR AGENCIES AS YOUTH AGE

The analysis presented thus far has focused on youth who had left secondary school no more than 2 years earlier. Our findings suggesting higher application rates for older youth raise the question whether a given group of youth would be more likely to apply for VR services as they aged and as more time elapsed since leaving high school.

Although the NLTS does not yet have longitudinal data for its entire sample that would enable us to answer this question for youth in all disability categories, longitudinal data are available from 1989 for youth who were out of secondary school in 1987 and who were primarily learning disabled, emotionally disturbed, speech impaired, or mildly or moderately mentally retarded (those in the exiter substudy, as described in Appendix A). In 1989, about half of these youth had been out of secondary school from 2 to 3 years, and half had been out of school between 3 and 4 years. These longitudinal data allow us to consider the question of whether rates of involvement with VR increased over time.

Table 12 demonstrates that, for youth in the selected disability categories, rates of VR involvement were relatively unchanged across the first 4 years after high school. Although rates were marginally lower for youth 1 to 2 years out of school than for those out of school less than a year, consistent with our earlier findings for youth in all disability categories, the difference was not statistically significant for this smaller subset of youth. There were no statistically significant differences between rates of application for VR services for any of the four years examined for these youth overall. Neither were there systematic differences in rates over time for youth in any of the individual disability categories included in the substudy. Although the percentage of applicants who were reported to have received services was marginally higher in the latter two years, the number of recipients of VR services in the substudy was too small to support any conclusions based on these figures. It is not known at this time whether this stability of VR involvement also would be observed for youth with other kinds of disabilities or for longer periods of time.

Table 12

INVOLVEMENT WITH VR AGENCIES IN THE PREVIOUS YEAR BY LENGTH OF TIME SINCE HIGH SCHOOL FOR OUT-OF-SCHOOL YOUTH IN SELECTED DISABILITY CATEGORIES

Disability Category	Years Since High School			
	Less than 1	1 to 2	2 to 3	3 to 4
Percentage of youth who applied for VR services				
All four conditions	14.7	8.8	10.9	8.7
	(3.0)	(2.6)	(2.6)	(2.4)
N	419	382	435	410
Learning disabled	11.0	6.6	7.4	4.5
	(4.0)	(3.1)	(3.2)	(2.6)
N	141	173	151	183
Emotionally disturbed	8.6	7.4	7.2	8.4
	(4.7)	(5.3)	(4.2)	(5.4)
N	89	66	91	72
Speech impaired	15.6	7.2	4.0	10.6
	(7.2)	(6.7)	(3.9)	(7.2)
N	66	37	67	44
Mentally retarded	27.4	15.0	23.5	28.9
	(6.1)	(5.3)	(5.7)	(5.6)
N	107	95	109	100
Percentage of applicants who were reported to have received services	76.9	77.2	89.9	82.8
	(8.7)	(10.1)	(6.0)	(8.2)
N	65	48	68	59

Note: Standard errors are in parentheses.
Source: 1987 and 1989 parent interviews (exiter substudy).

SUMMARY AND FUTURE RESEARCH ISSUES

The NLTS has explored the extent to which young people with disabilities were reported by parents to have applied for and received services from Vocational Rehabilitation agencies in their early years after secondary school. The questions that have guided our inquiry, and their answers, are summarized below:

- To what extent did young people with disabilities apply for services from Vocational Rehabilitation agencies in the early years after high school? The NLTS has found that 14% of out-of-school youth aged 16 or older applied for VR services, according to their parents.
- What characteristics of youth, their households, and/or their schools were related to higher rates of applying for services from VR agencies? Much of the variation in rates at which youth applied for VR services relates to characteristics of the young people and their families. The nature and severity of the youth's disability are powerful influences. The young people who applied for VR services generally had more severe disabilities, as measured by parent reports of their functional skills and their measured IQ scores. Those applying for services also exhibited a pattern of characteristics associated with marginally higher socioeconomic status when compared with young people not applying to VR agencies. Finally, young people who aged out of school were significantly more likely than youth who left secondary school either by graduating or dropping out to have applied for VR services.

  Despite the powerful relationships of individual and household factors to involvement with VR agencies, NLTS data suggest that schools also can play an important role in whether youth with disabilities apply for VR services. Only a minority of students attended schools that frequently contacted adult service agencies in general or VR agencies in particular in the transition activities of their students. However, we find that when such efforts by the school were more frequent, students were more likely to have applied for VR services.
- To what extent were applicants for VR services reported by parents to have received services from VR? Overall, 69% of applicants for VR services were reported by their parents to have received services.
- How did youth who were reported by parents to have received VR services differ from applicants who did not receive services? A more active relationship between schools and VR agencies also appears to benefit applicants for services in terms of an increased likelihood of receiving services; the rate of receipt was higher among students from schools where contacts between the school and VR agencies were more frequent. Perhaps a more active school-agency relationship helps school staff learn enough about VR eligibility requirements that they can encourage the most appropriate applicants to approach the VR agencies for service. Those who received services also were somewhat less severely disabled, when compared with applicants who did not receive services, perhaps because the more severely disabled nonrecipients were found not to be able to benefit from rehabilitation services, a requirement of eligibility for them. Data further suggest that applicants who received services were from somewhat higher socioeconomic households than applicants who were reported not to have received services.

- How did the rate at which youth applied for and received VR services change as the length of time since leaving secondary school increased? When we examined trends in rates of application for VR services across the first 4 years after high school for youth with learning, emotional, or speech impairments or mild or moderate mental retardation, we found no significant change in rates over time. A marginally higher percentage of applicants received services in the later years, but the number of recipients in the subsample was too small to base a conclusion on these figures.

Although the NLTS data regarding parent reports of application for and receipt of VR services for youth with disabilities shortly after high school illuminate some aspects of the transition process from secondary school to adult service agencies, the data are limited by questions regarding their accuracy and potential bias. Further, they include only two of the three actors in the transition process, the youth and their schools. Unfortunately, information about the third party in the transition of youth with disabilities from secondary schools to adulthood—the Vocational Rehabilitation agencies—is not available as part of the NLTS at this time. The responses of VR agencies to the applicants approaching them for service in the early years after high school have not been measured thus far in the NLTS. In the second phase of the longitudinal study, in 1990-91, we will measure again the involvement of youth with VR agencies. At that time, youth will be 3 years older than at the time of original data collection, and the majority will be out of secondary school, some for as long as 5 years. At that time, we will be able to plot trends in VR involvement over a longer period of time and for a greater variety of youth with disabilities.

Also in the follow-up phase, for the first time, the NLTS will collect data from VR records regarding the services provided to the youth in the sample. Hence, we will be able not only to describe the levels of involvement of young people reported by parents or youth, but the kinds, levels, durations, and outcomes of services provided, as recorded by VR agencies. This additional information will help paint a more complete picture of the interaction of VR agencies with the young people who approach them for services.

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APPENDIX A

OVERVIEW OF THE NATIONAL LONGITUDINAL TRANSITION STUDY OF SPECIAL EDUCATION STUDENTS

Appendix A

OVERVIEW OF THE NATIONAL LONGITUDINAL TRANSITION STUDY OF SPECIAL EDUCATION STUDENTS

As part of the 1983 amendments to the Education of All Handicapped Children Act (EHA), the Congress requested that the U.S. Department of Education conduct a national longitudinal study of the transition of secondary special education students to determine how they fare in terms of education, employment, and independent living. A 5-year study was mandated, which was to include youth from ages 13 to 21 who were in special education at the time they were selected and who represented all 11 federal disability categories.

In 1984, the Office of Special Education Programs (OSEP) of the U.S. Department of Education contracted with SRI International to determine a design, develop and field test data collection instruments, and select a study sample. In April 1987, under a separate contract to OSEP, with supplemental funding from the Rehabilitation Services Administration, SRI began the National Longitudinal Transition Study of Special Education Students (NLTS).

In the field of research on youth with disabilities, the NLTS is unique in several respects. For many years, the research base on youth with disabilities has consisted largely of studies of relatively few youth who were in particular disability categories, in a few school districts or a single state, or in a specific educational placement or treatment program. It has been very difficult to paint a broad picture of students from this fragmented research base. With the NLTS, findings are based on a large and nationally representative sample. The data presented here were collected in 1987 for a sample of more than 8,000 youth representing the national population of secondary special education students who were ages 13 to 21 in the 1985-86 school year. The sample permits us to estimate with fairly high precision many of the characteristics of youth with disabilities and their experiences in adolescence and early adulthood. Further, the sample is nationally representative of 1985-86 secondary special education students, both as a whole and for those in each of the 11 federal disability categories separately. Therefore, for the first time we know what the transition experiences were for youth with mental retardation, for example, and how they differed from those of youth with orthopedic impairments or multiple handicaps.

The NLTS is also unusual in its longitudinal design. The students for whom data were gathered in 1987 are being retained in the study, and follow-up data were collected about them in 1990. These follow-up data will enable the estimation of trends in experiences as youth age. For example, we will be able to describe the movement in and out of jobs and in and out of school that often characterizes youth in their early adult years.

Finally, the NLTS is extremely broad in scope, gathering information on a wide range of characteristics, experiences, and outcomes of youth with disabilities, including the following:

- Individual and family characteristics (e.g., demographics, disability-related characteristics).
- Independent functioning (e.g., residential independence, financial independence, functional abilities).
- Social experiences (e.g., belonging to school or community groups, socializing with friends).
- School programs (e.g., courses taken, support services provided, educational placements).
- School characteristics and policies (e.g., type of school attended, policies related to mainstreaming, programs available for special education students).
- School achievement and completion (e.g., grades received, absenteeism, dropout/graduation behaviors).
- Employment characteristics (e.g., rates of employment, job types and duration, wages).
- Postsecondary education participation in vocational schools and 2-year and 4-year colleges.
- Services provided by the school and other sources (e.g., job training, physical therapy, counseling).
- Parental expectations for youth in the areas of education, employment, and independence.

This breadth of scope provides the most comprehensive picture yet available of youth with disabilities during adolescence and early adulthood.

Study Components

The NLTS has four major components:

- *The parent/guardian survey.* In the summer and fall of 1987, parents were interviewed by telephone to determine information on family background and expectations for the youth in the sample, characteristics of the youth, experiences with special services, and the youths' educational attainments (including postsecondary education), employment experiences, and measures of social integration. Parents rather than youth were selected as respondents for the first wave of data collection because of the need for family background information and because, with most students still being in secondary school and living at home, parents were believed to be accurate respondents for the issues addressed. A follow-up survey was conducted in the fall of 1990, when youth were interviewed if they were able to respond.
- *School record abstracts.* Information has been abstracted from students' school records for their most recent year in secondary school (the 1985-86 or 1986-87 school year). This information relates to courses taken, grades achieved (if in a graded program), placement, related services received from the school, status at the end of the year, attendance, IQ, and experiences with minimum competency testing.

In spring 1991, secondary school transcripts will be sought for all youth who were in secondary school at any time since the 1986-87 school year.

- *Survey of secondary special education programs.* Schools attended by sample students in the 1986-87 school year were surveyed for information on enrollment, staffing, programs and related services offered to secondary special education students, policies affecting special education programs and students, and community resources for the disabled. A similar survey is being conducted in 1991 for youth still in secondary school in the 1990-91 school year.
- *Explanatory substudies.* Studies involving two subsamples of youth have looked in greater depth at (1) students' secondary school programs (the school program substudy), (2) the patterns of transition outcomes achieved by youth who were out of secondary school (the exiter substudy), and the relationship between school experiences and outcomes. Substudies were conducted in 1989 and 1990.

The NLTS Sample

The NLTS sample was constructed in two stages. A sample of 450 school districts was randomly selected from the universe of approximately 14,000 school districts serving secondary (grade 7 or above) special education students,* which had been stratified by region of the country, a measure of district wealth involving the proportion of students in poverty (Orshansky percentile), and student enrollment. Because not enough districts agreed to participate, a replacement sample of 178 additional districts was selected. More than 80 state-supported special schools serving secondary-age deaf, blind, and deaf blind students were also invited to participate in the study. A total of 303 school districts and 22 special schools agreed to have their students selected for the study.

Analysis of the potential bias of the district sample indicated no systematic bias that would have an impact on study results when participating districts were compared with nonparticipants on several characteristics of the students served, participation in Vocational Rehabilitation programs, the extent of school-based and community resources for the disabled, the configuration of other education agencies serving district students, and metropolitan status (see Javitz and Wagner, 1990, for more information on the district sample). Bias may exist, of course, on factors for which data were not available for such comparisons.

Students were selected from rosters compiled by districts, which were instructed to include all special education students in the 1985-86 school year who were in grades 7 through 12 or whose birthdays were in 1972 or before, whether they were served within the district or outside the district (e.g., in a state-supported residential school). Rosters were stratified into 3 age groups (13 to 15, 16 to 18, over 18) for each of the 11 federal disability categories, and youth

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* The 1983 Quality Education Data, Inc., (QED) database was used to construct the sampling frame. QED is a private nonprofit firm located in Denver, Colorado. Special education cooperatives and other special service units were not sampled directly (83% of special education students are served directly by school districts; Moore et al., 1988). However, instructions to districts for compiling student rosters asked districts to include on their listing any students sent from their district to such cooperatives or special service units. Despite these instructions, some districts may have underreported students served outside the district.

were randomly selected from each age/disability group so that approximately 800 to 1,000 students were selected in each disability category (with the exception of deaf blind, for which fewer than 100 students were served in the districts and schools included in the sample).

In part because of the time lapse between sample selection and data collection, many students could not be located at the addresses or telephone numbers provided by the schools. Of the 12,833 students selected for the sample, about one-third could not be reached by telephone for the parent interview. (For more than half of these, addresses and telephone numbers were not provided by the schools/districts from which they were sampled.) This relatively high rate of inability to reach sample members confirmed the importance of including in the NLTS a substudy of nonrespondents to determine whether those who were reached for the telephone interview were a representative sample of the population to which the study was intended to generalize. To identify whether bias existed in the interview sample, interviewers went to 28 school districts with relatively high nonresponse rates to locate and interview in person those who could not be reached by telephone. Of the 554 sought for in-person interviews, 442 were found and interviewed, a response rate of 80%. A comparison of telephone interview respondents with in-person interview respondents showed that the telephone sample underrepresented lower-income households. The sample was reweighted to adjust for that bias, as described in the next section.

Of the 10,369 sampled students for whom addresses or telephone numbers were provided by schools or districts, some portion of the needed data was collected for 84%; the response rates for individual components of the study were as follows:

	N	Response Rate
Parent interview	7,619	71%
School records	6,241	60
School survey	6,672	64

Weighting Procedures and the Population to Which Data Generalize

Youth with disabilities for whom data could be gathered were weighted to represent the U.S. population of special education students in the 1985-86 school year who were in grades 7 through 12 or at least 13 years old. Because it is a sample of students at various ages, the NLTS sample does not generalize to youth who had dropped out of school before that age. For example, the sample of 18-year-olds generalizes to youth who were 18 and still in secondary school in 1985-86, not to all 18-year-olds with disabilities, many of whom may have left school at an earlier age.

In performing sample weighting, three mutually exclusive groups of sample members were distinguished:

(A) Youth whose parents responded to the telephone interview.

(B) Youth whose parents did not respond to the telephone interview but were interviewed in person.

(C) Youth whose parents did not respond to either the telephone or in-person interview but for whom we obtained a record abstract.

A major concern in weighting was to determine whether there was a nonresponse bias and to calculate the weights in such a way as to minimize that bias. There was a potential for three types of nonresponse bias*:

(1) Bias attributable to the inability to locate respondents because they had moved or had nonworking telephone numbers.

(2) Bias attributable to refusal to complete an interview (only 3% of those available to be interviewed refused).

(3) Bias attributable to circumstances that made it infeasible to locate or process a student's record.

Of these three types of nonresponse, the first was believed to be the most important, in terms of both frequency and influence on the analysis. Type 1 bias was also the only type of nonresponse that could be estimated and corrected for.

The magnitude of type 1 nonresponse bias was estimated by comparing responses to items available for the three groups of respondents (after adjusting for differences in the frequency with which youth in different disability categories were selected and differences in the size of the districts selected). Group A was wealthier, more highly educated, and less likely to be minority than group B. In addition, group A was more likely to have students who graduated from high school than group B or C (which had similar dropout rates). Groups A and B were compared on several additional measures for which data were unavailable for group C. The youth described by the two groups were similar on these additional items, including gender, employment status, pay, functional skills, association with a social group, and length of time since leaving school. Adjusting the weights to eliminate bias in the income distribution eliminated bias in parental educational attainment and ethnic composition, but did not affect differences in dropout rates. It was also determined that groups B and C were large enough that if they were treated the same as group A in the weighting process, the resulting dropout distribution would be approximately correct.

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* We assumed that nonrespondents who could not be located because districts did not provide student names would have chosen to participate at about the same rate as parents in districts in which youth could be identified. The remaining nonrespondents would presumably have been distributed between the three types of nonresponse mentioned above.

Weighting was accomplished using the following steps:

- Data from the first two groups of sample members were used to estimate the income distribution for each disability category that would have been obtained in the absence of type 1 nonresponse bias.
- Respondents from all three groups were combined and weighted up to the universe by disability category. Weights were computed within strata used to select the sample (i.e., LEA size and wealth, student disability category and age).
- Weights from three low-incidence disability categories (deaf, orthopedically impaired, and visually impaired) were adjusted to increase the effective sample size. These adjustments consisted primarily of slightly increasing the weights of students in larger LEAs and decreasing the weights of students in smaller LEAs. Responses before and after these weighting adjustments were nearly identical. In addition, because there were only three deaf/blind youth from medium-size or smaller districts, and they had large weights, they were removed from the sample to increase the effective sample size. Thus, NLTS results do not represent the very small number of deaf/blind students in medium-size or smaller LEAs.
- The resulting weights were adjusted so that each disability category exhibited the appropriate income distribution estimated in step 1 above. These adjustments were of modest magnitude (relative to the range of weights within handicapping condition); the weights of the poorest respondents were multiplied by a factor of approximately 1.6, and the weights of the wealthiest respondents were multiplied by a factor of approximately .7.

Estimation of Standard Errors

The statistical tables in this report present data for various subgroups of youth with disabilities. Most of the variables presented in the tables are reported as percentages of youth. In some cases, rather than percentages, the figures refer to means, such as the mean age of youth contacting VR. Percentages and means are weighted to represent the national population of youth with disabilities and youth in each disability category. However, the percentages and means are only estimates of the actual percentages and means that would be obtained if all youth with disabilities were included in the study. These estimates vary in how closely they approximate the true measures that would be derived from a study of all youth. To aid the reader in determining the precision of the estimates, for each percentage and mean the tables present the approximate standard error and the unweighted number of cases on which the statistic is based.

The standard errors for the NLTS were computed using procedures that differ from standard calculation routines. Such routines assume a simple random sample. However, the NLTS used a stratified cluster sample design, which introduces design effects that reduce the precision of estimates for a sample of a given size, compared with a simple random sample. The design effects within the NLTS affect the precision of estimates to varying degrees for different subpopulations and different variables. Pseudo-replication is widely accepted as a variance estimation technique in the presence of design effects. However, it is not cost-effective for estimating the standard errors of the thousands of variables and subpopulations tabulated in the

numerous NLTS reports and its statistical almanacs. Therefore, pseudo-replication was conducted on a limited number of variables to calibrate a cost-effective approximation formula, using the following procedures:

- A set of 25 variables representing the parent interview, school program survey, and record abstract was identified for the purpose of developing a statistical approximation formula; these included 16 nominal variables and 9 continuous variables.
- Standard errors of the weighted means of the selected variables were estimated in two ways. The first procedure involved pseudo-replication. For each variable, standard errors were calculated for students in each handicap category and for the total sample (300 standard errors) using a partially balanced experimental design specifying how students were to be allocated to 16 half-samples. The sample was split on the basis of the school districts and special schools from which youth were originally sampled. Districts and schools were paired on the basis of enrollment and a measure of poverty, and one member of each pair was assigned to each half-sample. Sample weights for students were computed for each half-sample as if those in the half-sample were the only study participants.

  The following formula was used to estimate the standard error of the mean for students in all conditions:

$$\text{Standard error} = [(1/16)\ \Sigma_i\ (M_i - M)^2]^{1/2}$$

  where M_i is the mean calculated for students in one of the 16 half-samples), M is the mean response calculated from the full sample, and the summation extends over all 16 half-samples. (Note that responses to questions from the school program survey were attached to the records of students in the responding schools so that means for these items were computed using student weights.)

- The second estimation procedure involved an approximation formula based on an estimate of the effective sample size for each disability category and the total sample. The sampling efficiency (E) for a group was calculated using the following formula:

$$E = M_W^2/(M_W^2+S_W^2)$$

  where M_W and S_W are the mean and standard deviation of the student weights over all members of the group. The approximation formula for the standard error of the weighted mean of nominal variables is:

$$\text{Standard error} = [P(1-P)/(E \times N)]^{1/2}$$

  where P is the full-sample weighted proportion of "yes" responses to a particular question in the group, N is the unweighted number of "yes" or "no" responses to the question in the group, and E is the sampling efficiency of the group. The approximation formula for the standard error of the mean of a continuous variable is:

$$\text{Standard error} = [S^2/(N \times E)]^{1/2}$$

  where S^2 is the variance of responses in the group for the continuous variable (computed with frequencies equal to full-sample weights) and N is the unweighted number of respondents to the question in the group. These formulas were used to compute a total of 300 standard errors for the same variables and groups addressed using pseudo-replication.

- To assess the accuracy of the standard errors produced by these formulas, we used scatter plots to compare them with standard errors produced using pseudo-replication. For both nominal and continuous variables, the approximate best fit was a 45-degree line. That is, on average, the formula based on estimates of effective sample size neither systematically overestimated nor underestimated the standard error obtained using pseudo-replication, arguing for use of the more cost-effective estimation formulas. However, because error remains in the estimates that might result in underestimating the true standard errors in some instances, we took a conservative approach and multiplied the standard errors produced using the estimation formulas by 1.25. The vast majority of the standard errors so obtained were larger than the standard errors obtained by pseudo-replication. Thus, the standard errors were calculated using the effective sample size estimation formulas and increased by a factor of 1.25.

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APPENDIX B

VARIABLE CONSTRUCTION AND MEASUREMENT ISSUES

Appendix B

VARIABLE CONSTRUCTION AND MEASUREMENT ISSUES

This appendix begins by describing the construction of the variables regarding VR services used in this report. It follows this description with comments on other variables that will help the reader interpret them correctly. Finally, general caveats about the NLTS data are stated.

Construction of Variables Related to Involvement with VR Agencies

The variables related to involvement with VR agencies come from telephone interviews with parents. The following items were included in the 1987 parent interview:

B46 In the past 12 months, has (NAME OF YOUTH) or anyone in your household been referred to the Vocational Rehabilitation agency to get services for (NAME OF YOUTH)?

B47 In the past 12 months, has (NAME OF YOUTH) or anyone in your household actually contacted the Vocational Rehabilitation agency to try to get services for him/her?

B48 In the past 12 months, has (NAME OF YOUTH) been tested by or gotten services from the Vocational Rehabilitation agency?

B49 (IF B48 YES) What services has (NAME OF YOUTH) gotten from the Vocational Rehabilitation agency?

B50 (IF B48 NO) Why didn't (NAME OF YOUTH) get services from the Vocational Rehabilitation agency?
Reasons volunteered by parents were coded into the following categories:

- Handicap too severe
- Handicap too mild/no disabling condition
- Didn't qualify (other reasons or no reason given)
- Family decided they didn't want services
- Getting those services elsewhere
- Didn't apply/didn't follow up
- Too hard to get to/transportation a problem
- None was available
- Youth on waiting list/application pending decision on services

B4, B10, B15, B20, B25, B30, B34, B39

In addition to specific items about VR services, parents were asked whether youth received any of the following services in the past 12 months, regardless of source: vocational services, speech/language therapy, personal counseling/therapy, occupational therapy/life skills training, physical therapy/mobility training, assistance from a tutor/reader/interpreter, transportation assistance, or hearing-loss therapy. For each service received, the parent was asked the source of the service; VR could have been volunteered as the source of a particular service.

From these items, the following variables were constructed.

Application Rate

The application rate is constructed as a binomial variable with a value of 1 (yes) if:

Parent reported yes to B4, B10, B15, B20, B25, B30, B34, B39, or B48 (received service)

OR

Parent reported no to B48 (did not receive service) AND reason for not getting service was NOT that an application had not been submitted.

This variable may somewhat overestimate application rates because it assumes that for all youth who did not get VR services (no to B48), an application had actually been submitted unless the parents explicitly gave as a reason for not getting services that they had not applied. For example, if parents reported that youth did not get services because the family had decided they didn't want services, we assumed that an application had been submitted for services and then the decision was made not to participate in services. In fact, it is possible that parents could have decided against services before actually applying. However, only 104 cases coded as having applied for services were included in the variable based on this assumption (11% of cases). Therefore, the overestimation would not be large even if all cases included actually had not applied, an unlikely case. To the extent that overestimation of this variable occurs, the rate of receipt of services is underestimated (i.e., if fewer people actually applied, those receiving services would be a higher percentage of the total).

Applications Pending Decision

The percentage of applicants with a decision on eligibility pending was calculated by dividing the total number of applicants into the number of respondents giving "decision pending" as a reason for not receiving services.

Receipt of Services

Rates of receipt of service were calculated first by determining those who had received service: those whose parents responded yes to B4, B10, B15, B20, B25, B30, B34, B39, or B48. The rate of receipt was based on all applicants for whom a decision on eligibility had been made (total applicants minus those with decision pending). Hence, the rate of service receipt is:

$$\frac{\text{number receiving services}}{\text{(number of applicants - number with decision pending)}}$$

As mentioned above, this rate may be slightly underestimated if the number of applicants is overestimated. A reduction in the number of applicants would result in a higher rate of receipt. However, we note that the rate of receipt for this population (69%) is already higher than the overall acceptance rate for all VR clients (58%; RSA, 1988), suggesting that underestimation is not likely to be a significant problem.

Notes on Other Variables

Variables related to involvement with VR agencies are crosstabulated with numerous other variables; the source of each variable is indicated in the data tables. Although most of the variables are straightforward, the reader should be aware of the following points regarding the designation of the several variables discussed below.

- *Disability category.* Assignment to a disability category is based on the primary disability designated by the youth's school or district in the 1985-86 school year. Category definitions, assessment methods, and rules of thumb for categorizing students vary widely between states and often between school districts within states. There are also differences between school definitions of disability and those used in the VR system. VR classifications may have been different for those youth who received VR services. NLTS data should not be interpreted as describing youth who truly had a particular disability, but rather as describing youth who were categorized as having that disability by their school or district.
- *Self-care skills.* These questions were asked only of parents of youth who were classified as mentally retarded, visually impaired, deaf, orthopedically impaired, other health impaired, multiply handicapped, or deaf/blind. They were not asked of parents of youth who were classified as learning disabled, emotionally disturbed, speech impaired, or hard of hearing, with no other disabilities because such disabilities were assumed not to interfere in most cases with the performance of the basic self-care skills being investigated. Youth in these categories were assigned a value corresponding to "very well" for each item, which would sum to a score of 12 (high) on the corresponding scale. If the skills of youth in these categories were actually lower, the reported self-care skills scores would overestimate abilities.
- *Secondary school enrollment status.* Because the NLTS focuses on the time when youth move from secondary school into more adult experiences, the status of youth relative to secondary school is critical. The NLTS classifies youth into three categories based on their secondary school enrollment status: in secondary school, out of secondary school less than 1 year, and out of secondary school from 1 to 2 years

Secondary school enrollment status is based on data from two sources: the parent interview and/or the school record abstract. For 26% of youth, secondary school status is based on parent reports alone because no school record abstract could be obtained. Youth were coded as in school if the parents reported that the youth were currently enrolled or planned to be enrolled in the coming fall. Youth were coded as out of school less than a year if they were reported as having been enrolled in the previous 12 months. If parents reported no secondary school enrollment in the past year, the youth were coded as out of school more than 1 year.

For 14% of youth, secondary school enrollment status is based on information from school records alone because no parent interview could be completed. The school record abstract reports data from the student's most recent school year. Students whose most recent school year was 1985-86 were coded as out of school 1 to 2 years as of the 1987 interview. Students whose most recent school year was 1986-87 and who were reported as completing the school year by being promoted or not (as opposed to codes indicating the student had left school, e.g., graduated, aged out, suspended, incarcerated) were coded as in secondary school. Those whose most recent school year was 1986-87 but who were reported as graduating, dropping out, aging out, being suspended/expelled or incarcerated/institutionalized, or who had withdrawn, moved, or transferred were coded as out of secondary school less than 1 year.

For 60% of youth, both the parent interview and school record abstracts were available as sources for secondary school enrollment status. Of these youth, parents and school records agreed on the school enrollment status of 82% of youth, with the greatest agreement (97%) apparent for students still enrolled in secondary school. There was agreement in 77% of cases that youth were out of school, but less agreement as to the length of time they had been out of secondary school. Decision rules used to resolve discrepancies are reported elsewhere (Wagner, in process).

- *School completion status.* School completion status was coded in four categories: graduated, dropped out, aged out, and suspended/expelled. An exiter's completion status was derived from two sources: the parent interview and/or the school record abstract. For 30% of cases, school completion status was based on the parent interview alone. For 16% of cases, values were based on the school record abstract alone. For the 55% of cases in which both the parent interview and the school record abstract were available, there was agreement between the two sources on the youth's completion status for 78% of cases. Decision rules for resolving discrepancies are reported elsewhere (Wagner, in process).

- *Attended special school for students with disabilities.* Two sources of data were used to determine whether a student attended a special school serving only students with disabilities: the school record and the Survey of Secondary Special Education Programs. Enrollment status for 16% of cases was based on the survey alone, and 6% were based on the abstract alone. For the 76% of cases that had both sources, there was 98% agreement between them. In other cases, the survey was the preferred source.

- *IQ scores.* IQ scores were taken from students' school records for their most recent year in secondary school and recorded on the school record abstract form. However, IQ data were not available for all youth, and the fraction of students for whom IQ scores were available varied considerably for youth in different disability categories. For example, IQ scores were present in school records for 86% of youth classified as mentally retarded and for 84% of those classified as learning disabled, but for only 47% of youth with other health impairments and 50% of youth with

speech impairments. The relatively high rate of missing data for youth in some categories raised the question of whether available IQ scores were systematically biased downward. Were scores available more frequently for youth for whom average IQ was questioned? Perhaps IQ tests were not as routinely given to youth for whom there was little question of at least average IQ.

To address this issue, the functional ability levels were compared for youth with and without IQ scores in each disability category. To the extent that functional ability correlates with measured intelligence ($r=.54$; $p<.001$), bias would be present if lower functional ability scores were found for youth with IQ scores and higher scores for youth without IQ data. However, examination of the functional mental skills scale scores for youth classified as emotionally disturbed, hard of hearing, learning disabled, and visually impaired revealed no significant differences between youth with and without IQ test scores, indicating an absence of bias for them. However, youth classified as orthopedically impaired, other health impaired, and speech impaired with IQ data had significantly lower functional mental skills scale scores than those for whom IQ data were not available ($p<.05$). Thus, there appears to be some downward bias in the IQ scores for youth in these categories. However, for youth in the deaf/blind, multiply handicapped, and mentally retarded categories, functional abilities were significantly higher for those with IQ scores ($p<.001$). For these categories, an upward bias in IQ scores is apparent.

General Caveats Regarding the NLTS Data

In addition to the limitations of specific variables discussed in the previous section, the reader is cautioned to be aware of the following:

- *Sources of data and data reliability.* Each table indicates the source of the data reported in it (e.g., parent interview, school records). The confidence the user places in the data should be based in part on a recognition of their source. The accuracy of parent reports about their adolescent or adult children may vary depending on the subject of an item. For example, parents were expected to be quite accurate reporters of data on family characteristics, but to be less aware of—and, therefore, report less accurately on—the kinds of services their children were provided in school or by other agencies. When two sources of data were available for a given item (e.g., parent reports and school record indications of whether the youth graduated or dropped out), consistency checks were performed. For many variables, a high level of agreement was found (e.g., when schools reported that youth dropped out, parents concurred in 98% of cases). For other items, larger discrepancies were noted, particularly those related to receipt of support services. For example, in 15% of the cases in which school records indicated that a student received speech therapy, parents reported that none had been provided. Such discrepancies were resolved using decision rules reported in the previous section and at greater length in Wagner and Javitz (1990). However, for most items, only one source of data was available, making it impossible to verify the accuracy of the responses.
- *Missing data.* Missing data result from item nonresponse, the absence of the whole instrument from which an item was taken, or a logical skip of an item because it was inappropriate to a particular respondent (e.g., some items were asked only of parents of youth with particular kinds of disabilities). Missing data of all kinds were eliminated from calculations of percentages and means. Hence, the reported percentages and means are based on those for whom the question was appropriate

and who answered the question. The approximate standard errors increase as the sample size decreases, drawing the user's attention to statistics that are based on particularly small samples.

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